WILDERNESS EVALUATION

Grade Creek - 617047

10,318 acres

OVERVIEW

History

This area has not been identified as a roadless area in any previous inventory. The area was added to the inventory because it meets the criteria for a Potential Wilderness Area (PWA) as described in Forest Service Handbook (FSH) 1909.12 Chapter 70. The following chart depicts the 1990 Forest Plan direction for the 2006 potential wilderness area.

Table 1--Management Area Percentages (rounded)

Wenatchee National Forest	
GF	**ST2**
7%	93%

Location and Access

The Grade Creek potential wilderness area (PWA) is located in the middle to upper portions of the Falls Creek, Coyote Creek, Grade Creek and Little Grade Creek, and Poison Creek drainages and is bounded by the Grade Creek and Cooper Mountain Roads on its upper and lower ends. The PWA can be accessed by either of these roads. There are no maintained trails within the potential wilderness area, with the exception of a groomed snowmobile route on an old fireline down the ridge between Coyote Creek and Grade Creek. There is an abandoned trail in Grade Creek and some old firelines on ridgetops.

Geography and Topography

This potential wilderness area is centered around the Grade/Little Grade Creek drainages, which together form a relatively large, broad and steep drainage compared to others on the north shore of Lake Chelan. The area also includes the upper portions of Coyote and Falls Creeks, and a small portion of the lower Poison Creek drainage. The Grade Creek Road, which bounds the lower edge of the PWA, is generally located on the benches that form the top of the lateral moraine of the glacier that came down Lake Chelan. Because of this, the PWA is above the area that was glaciated by the Lake Chelan glacier. The smaller alpine glaciers apparently did not reach further downlake than Safety Harbor Creek on the uplake side of the PWA. The Cooper Mountain Road creates the upper boundary of the PWA and thus excludes the highest peaks of the watersheds from the potential wilderness area. Elevations range from around 3200 feet in the lower portion of the Poison Creek drainage to near 6550 feet in the upper portion of the Falls Creek Drainage. Grade Creek and Falls Creek both have some small, flatter valley bottom/confluence areas that support

wetter forest, and are a significant source of diversity within the lower north shore area of the Lake Chelan Drainage (see North Shore Watershed Assessment p. 3-39).

Current Uses

There are currently no grazing or mining activities in the area, though there has been active grazing in the past. There has been significant and recent mineral interest in a portion of the area as determined from the number of mining claims located between 1980 and 2000; however, there has been limited exploration. See the Minerals and Soils section for more detailed information regarding mineral interest and exploration. Lake Chelan Reclamation District water withdrawals from intakes on all the creeks within the PWA ceased with the 1970 fires, though diversion dams are still present within, or just below the potential wilderness area boundary. The only current use is snowmobile use of a fireline that is part of the groomed snowmobile route. Some trail bike use has occurred on the abandoned trail in Grade Creek. Salvage and timber sales have been proposed, and even marked though never implemented. The area primarily serves as a large, unroaded late-successional fire refugia for wildlife as most of the adjacent watersheds burned in stand replacement fires in 1970, 2001, and 2002.

Appearance and Surroundings

Falls and Coyote Creeks were burned with high severity in the 1970 Safety Harbor Fire. Poison Creek burned in the 1970 Mitchell Creek Fire and again in the 2002 Deer Point Fire. Only Grade Creek still supports an overstory forest, though it was also burned in the Deer Point Fire. The large, timbered Grade Creek basin is one of the few areas on the north shore that still gives an appearance of a forested environment. It provides visual relief from the open, rocky, and sparsely forested surroundings. This appearance may still change as a result of the long term effects of the Deer Point Fire.

The area offers unique scenic relief to the fire-scarred landscape of the north shore of Lake Chelan, though the primary viewing points are from the Cooper Mountain Road along the upper boundary, and very distant views from upper elevation forest roads on the south shore.

Key Attractions

The key attraction of the area is the scenic quality of the large expanse of mature/old-growth forest in a landscape dominated by high severity fire. The area also gives a feeling of remoteness that is not evident elsewhere on the lower north shore. It provides unique opportunities for huckleberry picking and off-trail/off-road viewing of wildlife not present in other areas of the lower north or south shores.

CAPABILITY FOR WILDERNESS

Level of natural and undeveloped environment

The entire area is undeveloped with minor exceptions of the LCRD water diversion dams and their associated abandoned roads, and firelines on the major ridges. Past timber sale proposals have left minor evidence such as boundary tags and marked trees in very limited

areas. Sections of old trails can be found in some portions of the valley bottoms. Visitors within the Grade Creek and portions of the Falls Creek areas would feel very little intrusion from human activities in the surrounding areas due to the sheltering topography of the basins, and the low level of use, low density, and low standard of the surrounding roads. Few, if any, developments are visible from within the area. The basins of Falls Creek, and particularly Grade Creek, are "tucked in", and sheltered from the motorized influence of the lake corridor.

The Grade Creek PWA is partially impaired by light pollution from the Lake Chelan area and other communities along the highway 97 corridor. The northern portion of the PWA (97 percent of the PWA) rates a Class 2 on the Bortle Scale, whereas the southern portion (3 percent of the PWA) rates as a Class 3. A Class 2 Typical Truly Dark Sky represents the darkest skies viewed in the continental United States. The summer Milky Way is highly structured to the unaided eye. Any clouds in the sky are visible only as dark holes or voids in the starry background. No light domes from population centers are visible. A Class 3 Rural Sky has some indication of light pollution on the horizon. Clouds may appear faintly illuminated in the brightest parts of the sky near the horizon, but are dark overhead. The Milky Way still appears complex. Light domes from population centers may appear on the horizon (10-15 degrees above horizon). Visual observing is still relatively unimpaired. Time lapse photography could be impaired by light pollution.

Water quality data is not available for most of the PWA, however, due to the relatively low level of disturbance water quality is assumed to be high. There may be localized disturbances due to grazing activities.

Non-native plant species are present such as orchard grass, clover, and timothy as a result of grass seeding that occurred in the Poison Creek, Coyote Creek, and a small portion of Falls Creek area following the 1970 fires. Some knapweed is present near the old diversion dam roads and on firelines. Cheatgrass is present on some hillsides that were heavily grazed in the past.

Rainbow trout have been introduced into Grade Creek above the road, and may have affected native amphibian populations in this naturally fishless stream.

Level of outstanding opportunities for solitude or primitive and unconfined recreation

This unroaded area offers opportunities for both solitude and primitive and unconfined recreation in the Grade/Little Grade area, and a portion of the Falls Creek area. These basins are largely out of view from the primary access road (Grade Creek Road). The Cooper Mountain road offers views of the area, but they are largely middle-ground views, and vegetation screens most recreation activities that would occur within the area. Use on the Cooper Mountain Road is light, and occurs high enough up the hillside that it offers little intrusion into the area. Opportunities for off-trail hiking, camping, fishing, hunting, and backpacking are available, and would offer adventurous and challenging experiences in a location that is uniquely close to visitors and residents of the local communities on both sides of the Sawtooth Ridge.

Special Features

Wetlands present in the low gradient portions of the Falls and Grade Creek drainages are another unique feature of this area, and represent important ecological diversity in this otherwise dry landscape.

Sightings of Pacific fisher have been reported in and near this area, but presence has not been confirmed. "Fisher Creek" on the Methow side of the Sawtooth divide suggests historic presence in the area. Wolverine have been reported but not confirmed in the area just above the PWA (Sawtooth PWA). The area is within the North Cascades grizzly bear recovery zone, in the lynx primary recovery area, and provides source habitat for wolverine. All of these species have very limited distribution within the region.

Manageability of Boundaries

Roads clearly bound most edges of the PWA. Exceptions include the boundary coming down from the Red Butte fireline to Poison Creek, and the "bump out" around the old reclamation district roads in the Coyote Creek area. Due to steep slopes above or below the bounding roads, physical/motorized intrusions are limited. Firelines do offer an opportunity for some visitors, primarily during hunting season, to travel off road in jeeps or all-terrain vehicles (ATVs), and some trail bikes have occasionally traveled the abandoned Grade Creek trail. Firelines are also used by snowmobilers in the winter. Fireline use in particular would be a challenge to manage if the area was designated as wilderness. The small group of off-trail riders that occasionally use the abandoned trails would also be difficult to monitor and manage, though their use of the area is now likely precluded by post-fire downfall of trees on what remains of the trail.

AVAILABILITY FOR WILDERNESS

Recreation

Recreation is currently limited to hunting, limited off-trail hiking, and use of one short snowmobile route. The snowmobile route receives relatively little use as it is quite steep, and groomed infrequently. Designation of the area as wilderness would remove this opportunity (slightly reducing availability of groomed snowmobile trails), causing snowmobilers to make a larger loop or to return on the same route. There is some public interest in making the main Grade Creek Road and other connecting sections to off-highway vehicle use. Wilderness designation is not likely to have much of an impact on off-trail motorcycle riders as this activity is likely to be limited by other policies, and is likely to have limited use anyway due to post-fire tree fall.

The town of Chelan and Lake Chelan area is a tourism-based community. Web-based information (2008) strongly promotes the natural beauty of the area, the vast amount of protected lands, and the remote uplake communities. The marketing of outdoor recreation primarily features cross-country skiing, downhill skiing, boating, and snowmobiling. While promotional materials do not directly mention the Grade Creek area, snowmobiling is portrayed as the best in the state due to the stellar views. The Grade Creek PWA would play a minor role in overall tourism other than contributing to snowmobiling and scenery.

Table 2--Miles of Recreation Trails

Motorized Trails	Non-motorized Trails	Snowmobile Trails
0	0	1

Wildlife

This area provides an important fire refugia for species dependent on late-successional habitat and/or large tree habitat conditions. Upper elevations are in the Ferry Basin, Hungry Ridge, and Cooper Mountain Lynx Analysis Units (LAUs). These LAUs offer some boreal forest habitat for lynx, particularly on north aspects at upper elevations that support lodgepole and subalpine fir. The Grade Creek area is unique on the north shore in that it can still provide denning habitat, whereas adjacent drainages mostly provide fire regenerated foraging habitat. Lynx have been observed in the upper portions of Grade Creek since the 2002 fire.

The area is part of the Lower Chelan Grizzly Bear Management unit. A grizzly was reported in the Grade Creek area years ago but not confirmed. Wilderness designation would result in the gain of approximately 2,000 acres of core area for grizzly bears. Fisher and wolves have also been reported but not confirmed.

A variety of other habitats (and their associated focal species) are present in the area. These include: forest mosaic in Falls and Coyote Creek (northern goshawk); medium-large tree habitat/all forest communities (Cassin's finch); medium-large tree forest/cool-moist forest in the bottoms of Falls, Grade, and Little Grade Creeks (pileated woodpecker, American marten); medium-large trees/dry forest (white-headed woodpecker); open forest (western bluebird, fringed myotis); open forest/ponderosa pine/big leaf maple habitat at lower elevations and draw bottoms (western gray squirrel); open forest/post-fire in Falls and Coyote Creeks, as well as some south aspects in Grade and Poison Creeks (Lewis' woodpecker, black-backed woodpecker); woodland/grassland/shrub habitats on south slopes at lower elevations (golden eagles, bighorn sheep); coniferous riparian areas in valley bottoms (inland tailed frog); riparian/large tree habitat (bald eagle); and shrubby/deciduous riparian habitat in valley bottoms (red-naped sapsucker).

Designation of this area as wilderness may affect fire and fuels management options. Portions of the area are located in wildland urban interface, and fires within the area have been known to push down-lake to residential areas in a matter of hours. Use of naturally ignited fires to reduce fuels is therefore unlikely due to the risk to the wildland urban interface (WUI). If the area was designated as wilderness, use of thinning to manage fuels would be precluded. Post fire mortality has not yet been assessed for the 2002 Deer Point fire–without active management of what could be a heavy fuel load, the next fire is likely to be of much higher severity, and may result in reduction of late-successional/large tree habitat and a reduction in the availability of associated wildlife species.

Each PWA provides varying levels of habitat for focal wildlife species. To help evaluate the habitat this areas provide, the following information was provided: the focal species emphasized in the area, amount of habitat for each focal species, the priority ranking for the habitat (based on conservation assessments and recovery plans), and the proportion of the total habitat available on the Forest that is within the PWA.

Table 3--Availability of habitat for federally listed Threatened and Endangered wildlife species and R6 Focal Species

Wildlife Species	Acres Habitat	Habitat Priority Ranking (1=high, 2-mod, 3=low)	%Total Forest Habitat In Evaluation Area
Grizzly bear	7,500	2	1
Canada lynx	488	1	<1
Wolverine	7,208	2	1
American marten	32	3	<1

A key issue relative to the sustainability of wildlife habitats is the identification of the amount of dry forest that is in a late-successional habitat area (LSHA). LSHAs that occur in dry forests can be at high risk of high severity wildfire, and insects and disease that reduce the sustainability of the late-successional habitats. Active management, such as prescribed fire and thinning, may be needed to restore these habitats and enhance their sustainability, and would not be compatible with wilderness designation.

Table 4--Acres of dry forest habitats that are present within the evaluation area and also within a late-successional habitat area

Late Successional Habitat Area	Acres of Dry Forest
Not in a LSHA	

Water and Fish

The Grade Creek proposed PWA is divided between three sub-watersheds: Safety Harbor Creek, Falls Creek, and Mitchell Creek Subwatersheds (6th HUCs). The Safety Harbor Creek sub-watershed covers 11,487 acres, with 100 percent of that acreage managed by the U.S. Forest Service. The 30 acres of the PWA in the Safety Harbor Creek Subwatershed is less than 1 percent of the subwatershed. The 3,776 acres of PWA in the Falls Creek Subwatershed equals 15 percent of the 24,770 acre sub-watershed. Approximately 78 percent of the subwatershed is managed by the U.S. Forest Service. The 6,503 acres of PWA in the 34,678 acre Mitchell Creek Subwatershed is 19 percent of that subwatershed. In Mitchell Creek, 90 percent of the subwatershed is managed by the U.S Forest Service.

When compared against unmanaged subwatersheds in good condition on the Okanogan and Wenatchee National Forest, vegetation condition is similar to expected condition and road management effects are low in Safety Harbor Creek Subwatershed. Considering changes in vegetation and road density in combination, this subwatershed was rated good. Stream reach data has not been collected in sufficient quantity for analysis; therefore, watershed conditions have not been evaluated.

When compared against unmanaged subwatersheds in good condition on the Okanogan-Wenatchee National Forest, some vegetation condition has changed from expected condition and road density is moderate for Falls Creek and Mitchell Creek Subwatersheds. Considering changes in vegetation and road density in combination, this subwatershed was rated fair. Stream reach data has not been collected in sufficient quantity for analysis; therefore, watershed conditions have not been evaluated.

Several Lake Chelan tributaries flow through this area: Falls Creek, Coyote Creek, Grade Creek, Little Grade Creek, and Poison Creek. The Grade Creek Road crosses all of these streams. Grade Creek is the only one of these streams that contains a potential fishery above the Grade Creek Road. The upper reaches of Grade Creek support a population of introduced rainbow trout; access is difficult.

Falls Creek below the Grade Creek Road hosts a robust population of native westslope cutthroat trout. Replacement of the fish-impassable culvert at the road crossing would allow upstream expansion of this population into presently fishless waters. This could create a more desirable recreational fishery.

Grade Creek is the largest stream in the Grade Creek PWA and the only stream in the area with a significant gauging record. Historically, flows in all the major tributaries in this area were diverted into the now defunct Lake Chelan Reclamation District during the 50+ year period up to 1976. The irrigation pipeline was at or near the elevation of the Grade Creek Road. It is likely that streams captured for irrigation were de-watered downstream of diversion points during the peak of the irrigation season.

The Grade Creek PWA has a water source protection area totaling 4,119 acres that contributes to a community water system for the Chelan County Public Utility District.

Range

Currently there are no active grazing allotments within the area. Permits for the Horsethief and the Chelan side of the McFarland allotments have been waived. The table below shows percent of land management in current cattle allotments.

Table 5--Grazing Suitability and Current Allotments

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
21	41	83	0

The allotments have not been closed but there are no current permittees, and any additional use would require new NEPA (National Environmental Policy Act). The last permitted use on the McFarland allotment was primarily sheep with possibly a small number of cattle permitted in Coyote Creek. All use was waived with no cattle in any of the allotments since 1999. The occasional cattle found in this area are from use that drifts over from the Okanogan and is trespass use.

Historically the area was used by both sheep and cattle. Sheep use was somewhat heavy in the early part of the century when forest conditions were more open. Cattle use in the McFarland allotment was somewhat heavy into the mid-1980s, but most use was concentrated around roads and streams. Other than a few livestock trails and driveway signs, evidence of past grazing is gradually fading from the landscape.

Designation of the area as wilderness would represent no changes for the range program.

Vegetation and Ecology

Ponderosa pine, Douglas-fir, and lodgepole pine are the dominant trees present in the area, though cedar are present in the valley bottoms and subalpine fir and some whitebark pine are present at the upper reaches of the area, particularly in Falls Creek. Some mountain sagebrush communities are present at upper elevations. Huckleberry is present in the lower portions of Grade Creek, which is fairly unusual for the lower Chelan drainage.

The area supports mature forest in the Grade Creek area and a mosaic of burned forest with varying degrees of regeneration throughout the remainder of the PWA. A small amount of timber harvest occurred early in the century above the access road to the Grade Creek diversion dam. Timber sales have been proposed in Grade Creek at least twice in the past 20 years, but were not implemented at least in part due to proposed helicopter harvest methods. Lack of access has historically limited harvest in this area.

Designation of the area as wilderness would make some areas that are shown as suitable for timber harvest unavailable. However, history has shown that these areas are of limited availability anyway due to access issues.

Wilderness recommendation would preclude options to utilize mechanical treatments to manage vegetation. Generally, the priority for restoration treatments occurs within the wildland urban interface (WUI) or within the dry, mesic forest groups. Because WUI is only about one eighth of the PWA, the prohibition on restorative treatments is not a concern. However, there may be a need to respond to needs in small portions of the WUI. An increasing concern is in recognizing that dry and mesic forest occurs on nearly half of this area.

The Healthy Forest Restoration Act (HFRA) authorizes direction to implement fuel reduction projects in the WUI. The HFRA prohibits authorized projects in wilderness areas.

Timber Harvest Suitability

The underlying criteria for determining timber harvest suitability are found in the Forest and Rangeland Renewable Resources Planning Act of 1974, 36CFR219.12, and Forest Service Handbook 1909.12, Chapter 60.

For the Colville and Okanogan-Wenatchee National Forests, the general criteria for timber suitability that will be used for timber harvest suitability are:

- Is it forest land (10 percent crown cover minimum, productivity >20 ft^3/ac/yr).
- The area has not been withdrawn from timber harvest or production.
- Soil, slope, or other watershed conditions will not be irreversibly damaged (based on soil attributes for erosion, instability, or compaction potential, slopes >65 percent, and certain land types)
- Reforestation can be assured within five years (lack of shallow soils, low frost heave potential, low surface rock, plant community type, certain land types, and elevation <5,500 feet)
- Economic and technologic viability (<0.5 miles from existing transportation system, species value or condition, volume availability, logging systems)

In consideration of all the criteria for determining timber harvest or timber production suitability and not just the fact that harvestable species can grow at a specific location, it appears this PWA does not have conditions that pass all the criteria. The main criterion for failure is that unacceptable resource impacts would likely occur due to road construction activities. This does not preclude helicopter operations that could fly material over sensitive areas to adjacent road systems. However, in most if not all cases helicopter logging and the associated expenses (such as manual slash treatments) would not be an economically viable option.

Table 6--Stand data percentages

Suitable for Timber Harvest	Forest Groups		WUI	
0%	Parkland	0%	Total WUI	12%
	Cold Dry	23%	WUI in Dry and Mesic Forest	19%
	Cold Moist	26%		
	Mesic	0%		
	Dry	47%		
	Non-forest	4%		

Fire

Fire occurrence is high in some portions of the area, particularly around Red Butte at the down-lake end of the potential wilderness area. Most of the area has burned at least once in the past 36 years, though Grade Creek has been spared severe fire effects likely as a result of being sheltered from prevailing down-lake winds.

In the context of the lower Lake Chelan landscape, the Grade Creek Drainage offers a unique mid-elevation late-successional forest. Though it burned in the extensive Camas Creek Fire of 1929, and again in the 2002 Deer Point Fire, much of the overstory has survived and provides a fire refugia for species dependent on large tree, forested, late-successional habitats. The topography of the area seems to contribute to the persistence of this refugia as the area is not subjected to the usual down-lake winds that cause most of the large, high severity fire events in the drainage. This suggests that, unlike most of the lower Lake Chelan drainage, it may be possible to retain late-successional conditions in this area in the long run. At this time, long-term mortality from the 2002 fire has not been assessed, and may alter this conclusion if long-term post-fire tree mortality causes an excessive fuel build up that would fuel future stand replacement fires.

Insects and Disease

The Wilderness Act of 1964 allows for the control of insects and disease, but taking such actions in wilderness is rare. Forest Service wilderness policy (Forest Service Manual 2324.11) directs the agency “to allow indigenous insect and plant diseases to play, as nearly as possible their natural ecological role”. Policy also directs the agency to “protect the scientific value of observing the effect of insects and disease on ecosystems and identifying genetically resistant plant species”, and finally, “to control insect and plant disease epidemics that threaten adjacent lands or resources.”

An aerial survey of this PWA was completed in the vicinity of this PWA in 2007. Defoliation by western spruce budworm was mapped on nearly 5,200 acres. Most of the defoliation was centered around Grade Creek, where defoliation was also reported in 2007. Observed defoliation has increased every year since 2005 (Figure 1).

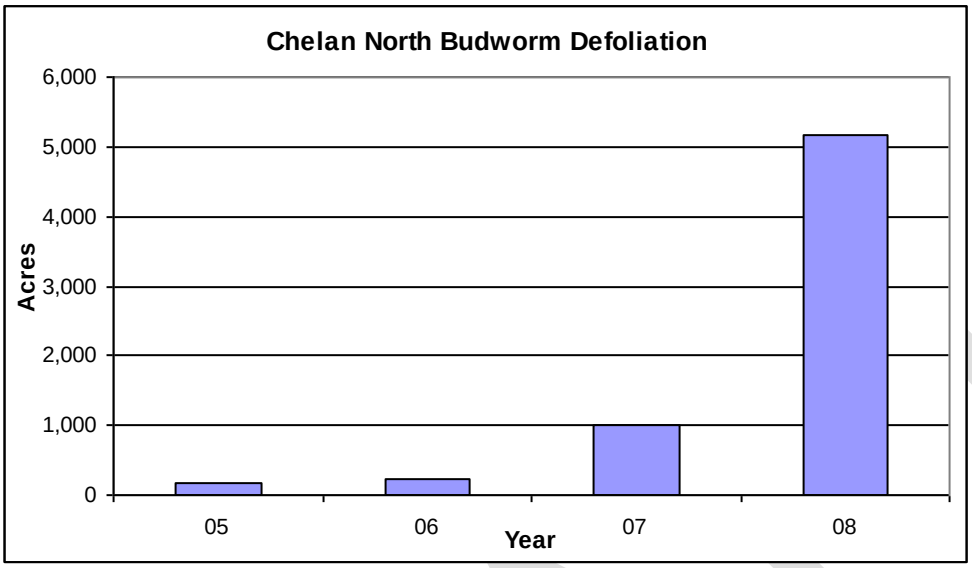

Figure 1

No fir engraver, Douglas-fir beetle, or spruce beetle damage was reported.

Threatened, Endangered, and Sensitive Plant Species

There are no known records of rare plant species at this location.

Noxious Weeds

Knapweed is established near a water diversion and on firelines in this PWA.

Minerals and Soils

The Grade Creek Potential Wilderness Area (PWA) is underlain by granitic rocks of the Eocene Cooper Mountain batholith. Prior to 1950, a small area along the Sawtooth Ridge just northeast of Fox Peak (just outside the PWA boundary) was prospected. Known as the Hidden Treasure prospect, an occurrence of gold, silver and copper in hydrothermally altered rock was reported. The only reported mine feature was a single 20 foot shaft and several trenches.

Interest in area the developed again in the mid 1970s, as was recorded by the number of mining claims that were located. About 400 lode mining claims were located over a period of about 25 years. Most claims were held for only a few years before being abandoned. Overall, probably 4,000 acres were involved, about half of which were inside the PWA boundary in the upper Gold Creek and Little Gold Creek drainages. Between 1989 and 1991, Battle Mountain Exploration held over 80 of the claims. The Forest Service has no record of significant exploration activity such as core drilling resulting from this intense claim activity so it is more likely that Battle Mountain and other companies limited their

exploration to taking rock chip and stream sediment samples. Presently, only four claims remain. Three are just outside the PWA boundary; one is partially inside the PWA.

In the summer of 2007, the owner of the four remaining active lode claims notified the forest of his interest in conducting drill exploration activities on his claims. However, he did not submit a proposed plan of operations–a necessary step prior to conducting significant mineral activities. It is reasonable to expect that he may propose exploration in the coming years. Only from the results of such exploration will the Forest Service be able to estimate with reasonable certainty the potential for the occurrence of economically significant mineral resources such as gold and silver within the PWA. The Forest Service currently rates the potential for economically significant mineral occurrences in the upper Gold Creek and Little Gold Creek area as moderate.

Cultural and Heritage Resources

Other than remnants of the LCRD irrigation project, and abandoned historic Forest Service trails and phone lines, there are no known historic sites within the PWA. A pestle was reportedly found near Coyote Springs within the PWA, and American Indian use of the area is likely, given the known huckleberry and hunting resources available within the area. This use would have likely been seasonal summer and fall use as the area is generally snow covered until late in the spring. Unless a site has been determined to be ineligible for the National Register, it is managed as a significant site until such a determination is made. Cultural sites are protected by law; however, a wilderness designation or a roadless designation would afford additional protection to cultural sites from ground disturbing activities.

Land Uses and Special Uses

The use of the area currently is limited to use of the groomed snowmobile route into Coyote Creek.

Private Lands

There are no private lands within the area.

NEED FOR WILDERNESS

Location and size of other wildernesses in the general vicinity, and distance from proposed area and population centers:

The Lake Chelan-Sawtooth Wilderness (151,435 acres) is approximately three miles to the northwest of this PWA. The nearest population center of the Puget Sound area is approximately 100 miles or two to three hours away. Many other wildernesses exist that are closer and provide easier access to high elevation mountains; such as William O Douglas (168,232 acres), Alpine Lakes (362,789 acres), Henry M. Jackson (100,356 acres), and Glacier Peak Wildernesses (570,573 acres).

In ranking this PWA for its potential to provide a high quality wilderness recreation setting it ranked as low, due to not offering a trail system, high quality destination attractions, or

an altogether new setting. The PWA is also quite remote (other than to the town of Chelan) which would limit visitation.

Present visitor pressure on other wildernesses, and trends and changing patterns of use:

The wildernesses listed in the section above and other wildernesses throughout the state serve a growing population from both sides of the Cascade Range. Most of the users are from the greater Puget Sound area. The portions of these wildernesses with easy access to spectacular destinations receive heavy use. In general, there is adequate wilderness on the east slope of the Cascades to absorb current and future recreation demand while maintaining moderate to low levels of use.

There is a continuous, slight increase in the number of people visiting nearby wilderness areas. The user groups showing the most increase are day hikers and visitors to some off-trail destinations throughout the wildernesses, and horse users in the Lake Chelan-Sawtooth Wilderness. There is also a trend to shorter multiple-day trips. In the past, eight to ten night trips were the most common, while the trips are now typically five to six consecutive nights.

Extent to which non-wilderness lands provide opportunities for unconfined outdoor recreation experiences:

The Sawtooth backcountry located between the existing wilderness and this PWA provides a unique high alpine motorized trail network not otherwise provided in northern Washington. The pressure to provide motorized uses continues to grow and is equal to or slightly more than non-motorized uses.

The Okanogan-Wenatchee National Forest provides a variety of roadless areas that are not designated wilderness. Some portions of these areas allow motorized use, whereas other areas are non-motorized. Other inventoried roadless areas in the vicinity that provide good opportunities for unconfined recreation include Sawtooth, Stormy, and Entiat-Chelan.

The need to provide a sanctuary for those biotic species that have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific value or phenomena:

Wildlife

The Grade Creek PWA provides habitat for goshawk, pileated woodpecker, western gray squirrel, tailed frog, American marten, lynx, wolverine, grizzly bear, fisher, and wolf, all of which do better in less developed or primitive surroundings. The Lake Chelan-Sawtooth Wilderness and potential wilderness area is located approximately three miles to the northwest and provides sanctuary for these species. Due to the limited size of this PWA and the fact that it is narrow and surrounded by roads it would provide only limited or temporary sanctuary at best. The wildlife sustainability index is 7.8 (a low relative ranking) and the habitat connectivity index is 7.8 (also low relative ranking).

Fish

Several native species in the interior Columbia River Basin have demonstrated an inability to survive in less than primitive surroundings, especially the bull trout. In addition to habitat changes on National Forest System lands, other factors off forest such as hydropower generation, hatchery programs, harvest, and changing ocean conditions further challenge the persistence of some far-ranging native species. Broad-scale assessments have demonstrated a positive correlation between unroaded areas and persisting native fish stocks. Often, assessments like these don't differentiate between wilderness and roadless areas; rather they combine the two into an "unroaded" category. These assessments show current strongholds (most secure and robust populations) are dependant on wilderness and roadless areas. Some of the more resilient native fish populations in the Interior Columbia Basin are located in unroaded areas on National Forest System lands.

For the Okanogan-Wenatchee National Forest PWAs were assigned an aquatic ranking based on federally listed and sensitive fish species that are sensitive to human disturbances. A high ranking was assigned when listed fish species occur in the PWA or when ecological process including high quality water help sustain listed fish species downstream of the PWA. All other PWAs are ranked low. This PWA is assigned a low ranking based on these factors.

Rare Plant Species

An analysis prioritized which PWAs would contribute the most to providing refugia for those plant species on the species of interest/species of concern (SOI/SOC) list. The analysis ranked three factors. The first factor, the total number of sites occurring within the PWA, ranked as low for this PWA. The second factor, which also ranked as low for this PWA, examined the degree of rarity of any SOI/SOC species present, and also recognized the importance of individual PWAs in supporting a high incidence of populations relative to Washington state as a whole.

PWAs are generally unsurveyed for rare plants due to a relative lack of projects occurring in these areas. Thus an additional factor examined the potential for the PWA to support SOI/SOC species. Based on databases, first the SOI/SOC plant species were identified that are present within a five-mile radius of the PWA, but are not known to occur within the PWA. Then the PWA was analyzed to see if the potential habitat for these species occurs within the PWA. Based on this analysis, this PWA ranks as low.

Finally, a composite score was assigned to each PWA based on combining each of the rankings described above. This PWA ranks overall as low priority for preserving rare plant refugia with a wilderness designation.

Ability to provide for preservation of identifiable landform types and ecosystems:

This area represents the East Cascades Ecoregion according to Bailey's Ecoregion Classification System. This ecoregion type is well represented in existing wilderness lands in the Cascade Range.

An analysis compared vegetative cover types that are under-represented in wilderness on the National Forest System in Region 6 with those same cover types present in the PWA.

Large-scale cover types were available through existing data layers and represent approximately 25 percent of the vegetative cover of this PWA (2,550 acres). These types include forb lands, non-alpine meadows, and ponderosa pine. Taken as a whole, the contribution of underrepresented vegetation types ranks as high for the portion of this area with underrepresented cover types, and also as high for the number of acres that are represented within this PWA relative to the other PWAs in the planning area.

Some under-represented cover types fill microhabitats such as riparian areas or perched water tables. Such finer scale cover types represented in this PWA include sparse amounts of cottonwood and aspen.

In particular, the ponderosa pine cover type, which comprises approximately 680 acres in this PWA, would make a significant contribution within the eastern Washington planning area.